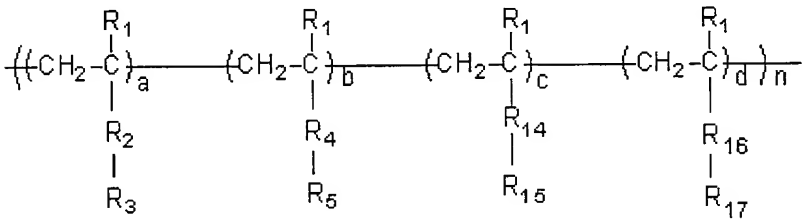
ABSTRACT OF THE DISCLOSURE

A polymer for a chemically amplified negative photoresist and a photoresist composition are provided. A representative polymer of the invention is a compound of formula 5:



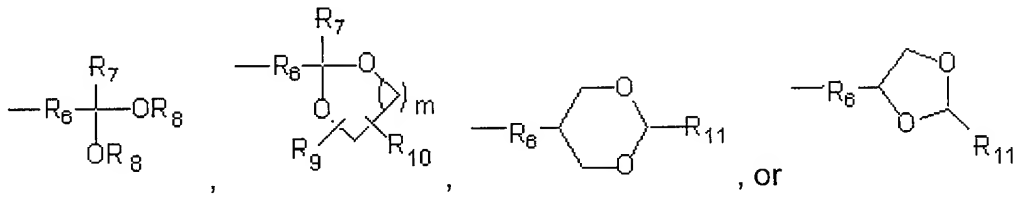
(5)

wherein:

R_1 is H or CH_3;

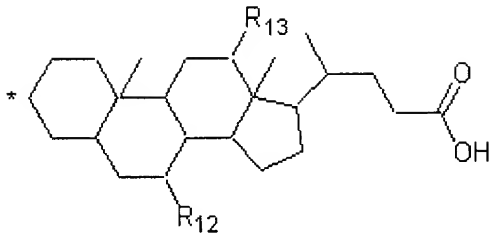
R_2 and R_4 are each independently $(R)_\alpha(CH_2)_\beta R'$ or $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein, R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

R_3 is represented by one of the formula:



wherein R_6, which combines an acetal compound and a vinyl compound, is a C_1-C_5 saturated alkyl, a C_1-C_5 ether, or a C_1-C_5 carbonyl; R_7 to R_{11} are each independently selected from H, C_1-C_5 saturated alkyls, C_1-C_5 ethers, C_1-C_5 carbonyl groups, and C_1-C_5 alcohol groups; and m is a number ranging from 1-5; and

R_5 is represented by formula:



wherein R_{12} and R_{13} are each independently H or OH; and

* represents the bonding site at which the R_4 group is bonded.

R_{14} and R_{16} are each independently selected from a single bond $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein, R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5); R_{15} is a hydroxyl group; R_{17} is a carboxyl group;

a, b, c, and d represent the mole ratios of each monomer, wherein a has a value of 0-0.5, b has a value of 0-0.9, c has a value of 0-0.3, and d has a value of 0-0.3, provided that a+b+c+d = 1; and

n represents the degree of polymerization of each polymer, and has a value of at least 2.